

EXPRESS MAIL MAILING LABEL: EU071710944US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: WANG et al.

S/N: To be assigned

Filed: Contemporaneous Herewith

Entitled: Improved Acid Copper Electroplating Solutions

Group No.: To be assigned

Examiner: To be assigned

Atty. Dkt.: 99A209-DIV

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Transmitted herewith is an Information Disclosure Statement ("IDS") in the above-referenced Application, together with Forms PTO/SB/08A and PTO/SB/08B which list all references cited.

This IDS is being mailed within three (3) months of filing of the above-captioned Application, if it is a National Application, or within three (3) months of entering, as set forth in 37 C.F.R. § 1.491, the national stage of the above-captioned Application, if the above-captioned Application is an International Application. Therefore, consideration of the IDS by the Patent and Trademark Office, without the payment of any additional fee, is believed to be due under 37 C.F.R. § 1.97(b). However, the Commissioner is hereby authorized to charge Deposit Account No. 02-2865 if any fee under 37 C.F.R. 1.17 is deemed necessary for the accompanying references to be considered by the Patent and Trademark Office.

Respectfully submitted,

Date: April 14, 2004
The BOV Group, Inc.
Legal Services - Intellectual Property
575 Mountain Ave.
Murray Hill, NJ 07974
(908) 771-6469


Ira Lee Zebrak
Attorney for Applicant(s)
Reg. No. 31,147

EXPRESS MAIL MAILING LABEL: EU071710944US

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1

of 4

| | |
|------------------------|-------------|
| Application Number | |
| Filing Date | |
| First Named Inventor | WANG et al. |
| Art Unit | |
| Examiner Name | |
| Attorney Docket Number | 99A209-DIV |

U. S. PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | Document Number | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|--------------------|-----------------------|--|--------------------------------|--|---|
| | | Number-Kind Code ² (if known) | | | |
| 1 | US- 3 267 010 | 08-16-1966 | Creutz et al. | | |
| 2 | US- 3 328 273 | 06-27-1967 | Creutz et al. | | |
| 3 | US- 3 615 736 | 10-26-1971 | Stone | | |
| 4 | US- 3 715 289 | 02-06-1973 | Cope, Jr. | | |
| 5 | US- 4 004 956 | 01-25-1977 | Brindisi, Jr. | | |
| 6 | US- 4 038 161 | 07-26-1977 | Eckles et al. | | |
| 7 | US- 4 134 803 | 01-16-1979 | Eckles et al. | | |
| 8 | US- 4 304 646 | 12-08-1981 | Courduvelis | | |
| 9 | US- 4 324 623 | 04-13-1982 | Schaer | | |
| 10 | US- 4 376 685 | 03-15-1983 | Watson | | |
| 11 | US- 4 430 173 | 02-07-1984 | Boudot et al. | | |
| 12 | US- 4 490 220 | 12-25-1984 | Houman | | |
| 13 | US- 4 555 315 | 11-26-1985 | Barbieri et al. | | |
| 14 | US- 4 808 481 | 02-28-1989 | Luxon | | |
| 15 | US- 4 717 439 | 01-05-1988 | Hajdu et al. | | |
| 16 | US- 4 786 746 | 11-22-1988 | Miljkovic | | |
| 17 | US- 4 897 165 | 01-30-1990 | Bernards et al. | | |
| 18 | US- 4 948 474 | 08-14-1990 | Miljkovic | | |
| 19 | US- 4 954 226 | 09-04-1990 | Mahmoud | | |

FOREIGN PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | Foreign Patent Document | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear | T ⁶ |
|--------------------|-----------------------|---|--------------------------------|--|---|----------------|
| | | Country Code ³ -Number ⁴ -Kind Code ⁵ (if known) | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | |
|--------------------|-----------------|
| Examiner Signature | Date Considered |
|--------------------|-----------------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

EXPRESS MAIL MAILING LABEL: EU071710944US

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Complete if Known**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2

of 4

| | |
|------------------------|-------------|
| Application Number | |
| Filing Date | |
| First Named Inventor | WANG et al. |
| Art Unit | |
| Examiner Name | |
| Attorney Docket Number | 99A209-DIV |

U. S. PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | Document Number | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|--------------------|-----------------------|--|--------------------------------|--|---|
| | | Number-Kind Code ² (if known) | | | |
| 20 | US- 5 051 154 | | 09-24-1991 | Bernards et al. | |
| 21 | US- 5 147 905 | | 09-15-1992 | Dubois et al. | |
| 22 | US- 5 151 170 | | 09-29-1992 | Montgomery et al. | |
| 23 | US- 5 174 886 | | 12-29-1992 | King et al. | |
| 24 | US- 5 215 645 | | 06-01-1993 | DiFranco et al. | |
| 25 | US- 5 266 212 | | 11-30-1993 | Szotek | |
| 26 | US- 5 328 589 | | 07-12-1994 | Martin | |
| 27 | US- 5 403 465 | | 04-04-1995 | Apperson et al. | |
| 28 | US- 5 433 840 | | 07-18-1995 | Dahms et al. | |
| 29 | US- 5 630 950 | | 05-20-1997 | Cangelosi | |
| 30 | US- 5 730 854 | | 03-24-1998 | Martin | |
| 31 | US- 5 733 429 | | 03-31-1998 | Martin et al. | |
| 32 | US- 5 750 018 | | 05-12-1998 | Brasch | |
| 33 | US- 5 849 171 | | 12-15-1998 | Dahms et al. | |
| 34 | US- 5 863 410 | | 01-26-1999 | Yates et al. | |
| 35 | US- 6 261 433 | | 07-17-2001 | Landau | |
| | US- | | | | |
| | US- | | | | |
| | US- | | | | |

FOREIGN PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | Foreign Patent Document | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear | T ⁶ |
|--------------------|-----------------------|---|--------------------------------|--|---|----------------|
| | | Country Code ³ -Number ⁴ -Kind Code ⁵ (if known) | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | |
|--------------------|-----------------|
| Examiner Signature | Date Considered |
|--------------------|-----------------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| | | | | |
|---|---|----|---|--------------------------|
| Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary) | | | | Complete if Known |
| | | | | Application Number |
| | | | | Filing Date |
| | | | | First Named Inventor |
| | | | | Art Unit |
| | | | | Examiner Name |
| Sheet | 3 | of | 4 | Attorney Docket Number |

99A209-DIV

| NON PATENT LITERATURE DOCUMENTS | | | | |
|--|-----------------------|---|--|----------------|
| Examiner Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | | |
| | 36 | "Copper Electroplating for Advanced Interconnect Technology," R.D. Mikkola, Q.-T. Jiang & B. Carpenter, PLATING & SURFACE FINISHING, March 2000, pp. 81-85 | | T ² |
| | 37 | "Leveling of 200 nm Features by Organic Additives," James J. Kelly and Alan C. West, ELECTROCHEMICAL AND SOLID-STATE LETTERS, 2 (11) (1999), LETTERS ONLINE, Kell1-Kell3 | | |
| | 38 | "Polyethylene Glycol in Copper Electrodeposition onto a Rotating Disk Electrode," M.R.H. Hill and G.T. Rogers, J. ELECTROANAL. CHEM., 86 (1978) 179-188 | | |
| | 39 | "Studies of Copper Deposition for High Aspect Ratio Printed Circuit Boards," M. Goodenough and K.J. Whitlaw, M. Goodenough and K.J. Whitlaw Trans. Inst. 1989, 67, 57, | | |
| | | pp. 57-62 | | |
| | 40 | "Effects of Polyethylene Glycol on the Electrochemical Characteristics of Copper Cathodes in an Acid Copper Medium," J.D. Reid and A.P. David, PLATING AND SURFACE FINISHING, | | |
| | | January 87, pp. 66-70 | | |
| | 41 | "Damascene Copper Electroplating for Chip Interconnections," by P.C. Andricacos, C. Uzoh, J.O. Dukovic, J. Horkans, H. Deligianni, IBM J. RES. DEVELOP., Vol. 42, No. 5, | | |
| | | September 1998 | | |
| | 42 | "Additive Components: Overall Adsorption Behavior," presented by J. Reid, Novellus Systems, UC Berkeley Extension, June 8-10, 1998 | | |

| | | | |
|--------------------|--|-----------------|--|
| Examiner Signature | | Date Considered | |
|--------------------|--|-----------------|--|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

EXPRESS MAIL MAILING LABEL: EU071710944US

PTO/SB/08B (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

Approved for use through JUNE 30, 2007. GPO 2001-080
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| | | | |
|---|---|-------------------------------|-------------|
| Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. | | Complete if Known | |
| Substitute for form 1449/PTO | | Application Number | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | | Filing Date | |
| | | First Named Inventor | WANG et al. |
| | | Art Unit | |
| | | Examiner Name | |
| Sheet | 4 | of | 4 |
| | | Attorney Docket Number | 99A209-DIV |

NON PATENT LITERATURE DOCUMENTS

| | | | |
|-----------------------|--|--------------------|--|
| Examiner Signature | | Date Considered | |
|-----------------------|--|--------------------|--|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Applicant's unique citation designation number (optional). - Applicant is to place a check mark here if English language translation is attached.
This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.